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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/594,114	09/25/2006	Hideo Noro	00862.109670.	7038

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EXAMINER	
MARTELLO, EDWARD	
ART UNIT	PAPER NUMBER
2628	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/594,114	NORO ET AL.	
	Examiner	Art Unit	
	Edward Martello	2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 December 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *10-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10-16* is/are rejected.

7)☐ Claim(s) _ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is responsive to the amendment received 16 December 2008.

2. Claims 1-6 and 9 are cancelled in the current amendment, claims 7 and 8 were previously cancelled and new claims 10-16 are entered into the record and are currently pending for examination.

Specification

3. The abstract of the disclosure is objected to because the version of the abstract received 16 December 2008 significantly exceeds the 150 word limit imposed upon an abstract. Correction is required. See MPEP § 608.01(b).

4. The applicants' amendments have necessitated the new ground(s) of rejection which follow.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1-9 (Cancelled).

6. Claims 10 and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jaszlics et al. (U. S. Patent 6,166,744, already of record, hereafter '744) and further in view of Meisner et al. (U. S. Patent 6,625,299 B1, hereafter '299).

7. In regard to claim 10 (New), Jaszlics teaches an image processing apparatus for composting an image of a virtual object and a physical space image to generate a mixed reality image ('744; fig. 1 & 2) but does not teach and causing an HMD to display the mixed reality image, and continues teaching comprising: a database ('744; fig. 22) which holds data used for generating the image of the virtual object; an image capturing unit ('744; fig. 2, element 100, camera) but does not teach which is attached to the HMD and continues to teach the camera captures the physical space image ('744; fig. 2; col. 8, ln. 53-61); a first measurement unit which measures a position and orientation of the HMD (''744; head position; col. 10, ln. 48-60); an object manipulation unit which is used by a user in order to operate a position and orientation of the virtual object ('744; joystick; col. 10, ln. 35-38; col. 11, ln. 47-56); a second measurement unit which measures a position and orientation of said object manipulation unit ('744; col. 11, ln. 47-56); an operation panel which is positioned in a physical space ('744; fig. 16, Display A), displays an operation panel image ('744; fig. 21) used for editing the virtual object, and is capable of receiving a user instruction of editing the virtual object ('744; an operation panel image generation unit which generates the operation panel image by using the data held in said database ('744; fig. 20 & 22; virtual simulation computer); a rendering unit which updates the data held in said database according to the user instruction received via said operation panel and the measurement result of said second measurement unit, and renders, by using the updated data,

the image of the virtual object according to the measurement results of said first and second measurement units (‘744; fig. 20 & 22; virtual simulation computer); a composition unit which composites the image of the virtual object rendered by said rendering unit and the physical space image captured by said image capturing unit to generate the mixed reality image (‘744; fig. 20 & 22; virtual simulation computer); but does not teach an HMD which displays the mixed reality image generated by said composition unit. Meisner, working in the same field of endeavor, however, teaches a HMD to display the mixed reality image (‘299; fig. 15; col. 8, ln. 1-10) and a video camera attached to the HMD for physical scene capture (‘299; fig. 15; col. 8, ln. 1-10) for the benefit of allowing the user hands free involvement in the VR simulation scenarios. It would have been obvious to one of ordinary skill in the art at the time of the invention to have combined the HMD teaching of Meisner with the rich VR apparatus teaching of Jaszlics for the benefit of allowing the user hands free involvement in the VR simulation scenarios.

8. Regarding claim 13 (New), Jaszlics and Meisner teach the apparatus according to claim 10 and Jaszlics further teaches wherein said operation panel includes a display device (‘744; fig. 16, Display A) and an operation device (‘744; joystick; col. 10, ln. 35-38; col. 11, ln. 47-56), wherein the display device displays the operation panel image, and wherein the operation device is used for inputting the user instruction.

9. In regard to claim 14 (New), Jaszlics and Meisner teach the apparatus according to claim 10 and Meisner further teaches wherein the HMD can present the mixed reality image to two eyes of a user who wears the HMD (‘299; fig. 15).

10. Regarding claim 15 (New) Jaszlics teaches an image processing method of composting an image of a virtual object and a physical space image to generate a mixed reality image (‘744;

fig. 1 & 2) but does not teach causing an HMD to display the mixed reality image, and continues teaching comprising the steps of: holding data used for generating the image of the virtual object in a database (‘744; fig. 22); providing an image capturing unit (‘744; fig. 2, element 100, camera), but does not teach which is attached to the HMD, and continues to teach the camera capturing the physical space image (‘744; fig. 2; col. 8, ln. 53-61); measuring a position and orientation of the HMD with a first measurement unit (‘‘744; head position; col. 10, ln. 48-60); operating an object manipulation unit, by a user, in order to position and orient the virtual object (‘744; joystick; col. 10, ln. 35-38; col. 11, ln. 47-56); measuring a position and orientation of the object manipulation unit with a second measurement unit (‘744; col. 11, ln. 47-56); positioning an operation panel in a physical space to display an operation panel image used for editing the virtual object (‘744; fig. 16, Display A), the operation panel being capable of receiving a user instruction of editing the virtual object (‘744; fig. 21); generating the operation panel image by using the data held in the database with an operation panel image generation unit; updating the data held in the database according to the user instruction received via the operation panel and the measurement result of the second measurement unit (‘744; fig. 20 & 22; virtual simulation computer), and rendering, by using the updated data, the image of the virtual object according to the measurement results of the first and second measurement units (‘744; fig. 20 & 22; virtual simulation computer); compositing the rendered image of the virtual object and the captured physical space image to generate the mixed reality image (‘744; fig. 20 & 22; virtual simulation computer); but does not teach displaying the generated mixed reality image on an HMD. Meisner, working in the same field of endeavor, however, teaches a HMD to display the mixed reality image (‘299; fig. 15; col. 8, ln. 1-10) and a video camera attached to the HMD for

physical scene capture (‘299; fig. 15; col. 8, ln. 1-10) for the benefit of allowing the user hands free involvement in the VR simulation scenarios. It would have been obvious to one of ordinary skill in the art at the time of the invention to have combined the HMD teaching of Meisner with the rich VR apparatus teaching of Jaszlics for the benefit of allowing the user hands free involvement in the VR simulation scenarios.

11. In regard to claim 16 (New), Jaszlics teaches a computer-readable storage medium encoded with a computer program for an image processing method of composting an image of a virtual object and a physical space image to generate a mixed reality image (‘744; fig. 1 & 2) but does not teach causing an HMD to display the mixed reality image, and continues teaching comprising the steps of: holding data used for generating the image of the virtual object in a database (‘744; fig. 22); providing an image capturing unit (‘744; fig. 2, element 100, camera), but does not teach which is attached to the HMD, and continues to teaching to capture the physical space image (‘744; fig. 2; col. 8, ln. 53-61); measuring a position and orientation of the HMD with a first measurement unit (‘‘744; head position; col. 10, ln. 48-60); operating an object manipulation unit, by a user, in order to position and orient the virtual object (‘744; joystick; col. 10, ln. 35-38; col. 11, ln. 47-56); measuring a position and orientation of the object manipulation unit with a second measurement unit (‘744; col. 11, ln. 47-56); positioning an operation panel in a physical space (‘744; fig. 16, Display A) to display an operation panel image used for editing the virtual object (‘744; fig. 21), the operation panel being capable of receiving a user instruction of editing the virtual object(‘744; fig. 21); generating the operation panel image by using the data held in the database with an operation panel image generation unit (‘744; fig. 20 & 22; virtual simulation computer); updating the data held in the database according to the user instruction

received via the operation panel and the measurement result of the second measurement unit, and rendering, by using the updated data('744; fig. 20 & 22; virtual simulation computer), the image of the virtual object according to the measurement results of the first and second measurement units('744; fig. 20 & 22; virtual simulation computer); compositing the rendered image of the virtual object and the captured physical space image to generate the mixed reality image('744; fig. 20 & 22; virtual simulation computer); but does not teach displaying the generated mixed reality image on an HMD. Meisner, working in the same field of endeavor, however, teaches a HMD to display the mixed reality image ('299; fig. 15; col. 8, ln. 1-10) and a video camera attached to the HMD for physical scene capture ('299; fig. 15; col. 8, ln. 1-10) for the benefit of allowing the user hands free involvement in the VR simulation scenarios. It would have been obvious to one of ordinary skill in the art at the time of the invention to have combined the HMD teaching of Meisner with the rich VR apparatus teaching of Jaszlics for the benefit of allowing the user hands free involvement in the VR simulation scenarios.

12. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jaszlics et al. (U. S. Patent 6,166,744, already of record, hereafter '744) as applied to claims 10 and 13-16 above and in view of Meisner et al. (U. S. Patent 6,625,299 B1, hereafter '299) as applied to claims 10 and 13-16 above and further in view of Lescinsky et al. ("Interactive Scene Manipulation in the Virtue3D System," ACM Weg3D'02, pp. 127-135, February 24-28, 2002, Tempe, Arizona, ACM 1-58113-468-1/02/0002, already of record, hereafter '468).

13. Regarding claim 11 (New), Jaszlics and Meisner teach the apparatus according to claim 10 but do not teach wherein the image of the virtual object is generated on the basis of 3D CAD data of the virtual object, and said operation panel displays an assembly tree based on the 3D

CAD data. Lescinsky, working in the same field of endeavor, however, teaches wherein the image of the virtual object is generated on the basis of 3D CAD data of the virtual object, and said operation panel displays an assembly tree based on the 3D CAD data ('468; fig. 4, pg. 133, § 9).

14. Regarding claim 12 (New), Lescinsky further teaches wherein a part, which is obtained by enlarging a designated part of the assembly tree included in the operation panel image, includes a component name contained in the assembly tree ('468; fig. 4, pg. 133, § 9).

Response to Arguments

15. Applicant's arguments with respect to claims 10-16 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The following prior art, made of record, was not relied upon but is considered pertinent to applicant's disclosure:

US 6972734 B1	Mixed reality apparatus and mixed reality presentation method
US 20010038378 A1	Portable game display and method for controlling same – An augmented-reality display method and system for the visually impaired.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edward Martello whose telephone number is (571) 270-1883. The examiner can normally be reached on M-F 7:30-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Xiao Wu can be reached on (571) 272-7761. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/EM/
Examiner, Art Unit 2628

/XIAO M. WU/
Supervisory Patent Examiner, Art Unit 2628